

**BROOKHAVEN**  
NATIONAL LABORATORY

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for the U.S. Department of Energy

# Memo

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to: Distribution

from: D. I. Lowenstein, C. Anderson, L. Chang

subject: **Memorandum of Understanding between the Collider Accelerator, Medical, and Biology Departments for conducting Radiobiology Experiments at C-A Department User Facilities**

1. The C-A Department is ultimately responsible for environment, safety and health (ESH) at the C-A experimental areas, including the experiments executed by other Departments within these areas. The C-A Department will communicate in writing to the experimental groups, information regarding changes in policy, ESH issues or other information relevant to the ESH envelope to operate. The C-A Department will conduct Tier-1 inspections of the experimental areas.
2. The User(s),<sup>1</sup> through their administrative structure have the responsibility to follow applicable requirements in the BNL SBMS and to establish Integrated Safety Management, Environmental Management, and Work Control Systems, including operating procedures, for their experimental station. If C-A Department Enhanced Work Planning is executed for moderate or high hazard work in a C-A User facility that houses a radiobiology experiment, then the an experiment's Work Control Coordinator, Liaison Engineer, and the 'Primary Reviewer' must sign the work package.
3. C-A Department has the authority to audit User management systems related to ESH and User training records to ensure compliance and consistency with BNL and C-A Department requirements.
4. C-A Department has the authority to deny beam time and/or detector operations in part or in total to a User if compliance with ESH requirements is found to be inadequate.

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<sup>1</sup> User(s) refers to a single User or to the amalgam of Users that make up a specific approved experiment.

5. With regard to equipment and instrumentation, User(s) are responsible to comply with the requirements of the C-A Department during design, construction and operation of experiments. The C-A Department has the sole responsibility to construct, operate and maintain experimental area infrastructure systems. This includes, but it is not limited to facility safety systems, shielding, electrical, cryogenic, vacuum and high-pressure systems.
6. User(s) are required to follow all applicable C-A Department requirements when working at C-A Department User facilities (e.g., attend annual C-A Radiobiology Training). This does not obviate the necessity for the User(s) to comply with other requirements of other Departments or Institutions with which they are affiliated.
7. C-A Department is responsible for assigning a Liaison Physicist, a Liaison Engineer, and a Work Control Coordinator to interface with User(s).
8. The Medical Department and Biology Department shall assign a Liaison Experimenter who is resident at BNL. The Liaison Experimenter will be empowered to speak with authority for the User(s) with regard to ESH issues.

The following is an outline of how radiobiology experiments performed at C-A Department are to be reviewed for ESH and regulatory issues:

- I) A proposal is sent to BNL Associate Director for High Energy and Nuclear Physics. The Associate Directors office provides application forms, safety forms, and details for completion of proposals. The BNL Associate Director for High-Energy and Nuclear Physics transfers completed proposals to the Chair of SACR (Scientific Advisory Committee for Radiobiology). The Associate Director may also appoint specific reviews to address specific issues.
- II) The Biology Department Liaison Experimenter, Medical Department Liaison Experimenter, and the C-A Work Control Coordinator review the proposal application. The proposal application must contain the Safety Approval Form that shall be completed by the User. Additional discussion and information gathering may occur. Resources are defined to meet requirements for safety, regulatory issues and radiobiology.
- III) The Biology Department Liaison Experimenter, Medical Department Liaison Experimenter, C-A Liaison Physicist, Liaison Engineer, and the C-A Work Control Coordinator shall review design, construction, safety, waste, and quality control issues as appropriate. They shall consider related technical and administrative issues especially those administrative issues that relate to Department interfaces. They shall consider training issues such as C-A Radiobiology Training, Radiation Worker Training, and Laboratory required training.

- IV) The Medical Department Liaison and the Biology Department Liaison reviews the proposal for IACUC (Institutional Animal Care and Use Committee), HSRC (Human Studies Research Committee), and regulatory consideration and approval. If these reviews are applicable to a particular experiment, then approvals are required prior to the beginning of work.
- V) The SACR shall review the proposal, the radiobiology, and the resources. Approval, deferral or rejection of proposal occurs.
- VI) The BNL Associate Director for High Energy and Nuclear Physics may give further consideration to a proposal.
- VII) The Medical Department Liaison Experimenter, the Biology Department Liaison Experimenter, the C-A Liaison Physicist and Engineer determine availability of technical/scientific resources in their respective Departments in order to accommodate the experiment. They shall relay this information to the User(s).
- VIII) All proposed work that will occur at C-A Department facilities by User(s) who are guests of the Medical Department is reviewed by the Medical Department's ESH Coordinator and the C-A Department Work Control Manager. The Medical Department's ESH Coordinator and Medical Department's Liaison Experimenter shall ensure that recommendations made by the reviewers, HSRC, and/or IACC are closed out at the appropriate time.
- IX) All proposed work that will occur at C-A Department facilities by User(s) who are guests of the Biology Department is reviewed by the Biology Department's ESH Coordinator and the C-A Department Work Control Manager. The Biology Department's ESH Coordinator and Biology Department's Liaison Experimenter shall ensure that recommendations made by the reviewers, HSRC, and/or IACC are closed out at the appropriate time.
- X) C-A Department's Experimental Safety Review Committee (ESRC) shall review the radiobiology experiment station and has the authority to make recommendations. Additional reviews may be required as necessary such as Cryogenic safety reviews or review by the Chief Mechanical Engineer. The C-A Liaison Physicist, C-A Liaison Engineer, Biology Department Liaison Experimenter or Medical Department Liaison Experimenter shall make the presentation to the committee.
  - 1. A generic approval may be granted from the ESRC for a class of radiobiology experiments. An envelope shall be identified by the ESRC beyond which changes must be formally reviewed by the ESRC, otherwise the experiment may proceed after the following approvals are obtained:
    - i) C-A Department Liaison Physicist approval
    - ii) Biology Department Liaison approval
    - iii) Medical Department Liaison approval

2. The C-A Liaison Physicist and Engineer implement recommendations.
  3. The C-A Department ESRC performs a periodic walk-through review of the radiobiology experiment.
  4. The C-A Liaison Physicist and/or Liaison Engineer shall obtain approval of the ESRC on all significant changes to an approved experimental station.
- XI) C-A Department's Radiation Safety Committee (RSC) shall review the radiobiology experiment station and has the authority to make recommendations. The C-A Liaison Physicist, C-A Liaison Engineer, Biology Department Liaison Experimenter or Medical Department Liaison Experimenter shall make the presentation to the committee. The RSC may also refer the design for additional review by the ALARA Committee.
1. A generic approval may be granted from the RSC for a class of radiobiology experiments. An envelope shall be identified by the RSC beyond which changes must be formally reviewed by the RSC, otherwise the experiment may proceed after the following approvals are obtained:
    - i) C-A Department Liaison Physicist approval
    - ii) Biology Department Liaison approval
    - iii) Medical Department Liaison approval
  2. The C-A Department Liaison Physicist and Engineer implement all recommendations. The RSC Chair tracks implementations of RSC recommendations to closure.
  3. The C-A Department Liaison Physicist and/or Liaison Engineer shall obtain approval of the RSC on all significant changes to an approved experimental station.
- XII) The BNL Associate Director for High Energy and Nuclear Physics, in consultation with C-A staff, establishes scheduling priorities.

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